

### **Remarks**

Upon entry of the present Reply, claims 1-23 and 25-44 are pending in the application. Claims 1, 28 and 36 are amended and new claim 44 is added herein.

Claims 1, 28 and 36 are amended to specify that surface area of the first major surface is increased by a factor of from about 60% to about 120% in the micro-roughening step. Support for the amendments may be found, for example, at page 15, lines 18-20.

Originally filed claim 24, previously cancelled, is reinstated as claim 44.

Applicants submit herewith the Declaration of Patrick Brooks Under 37 C.F.R. 1.132. Discussion of this Declaration is set forth below. In addition, Applicants submit herewith the Second Declaration of Craig V. Bishop Under 37 C.F.R. 1.132. Discussion of this Declaration is set forth below.

Applicants respectfully submit that the presently presented claims fully patentably distinguish over the prior art of record, for at least the reasons set forth in the following, together with the facts shown in the Declaration. Reconsideration of the application, withdrawal of the rejections, and allowance of the claims is respectfully solicited.

### **Summary of Substance of Personal Interview with Examiner**

On 22 February 2007, a personal interview was held with Examiner Culbert and Applicants' undersigned attorney, Thomas W. Adams (collectively, "the parties"). Applicant and the undersigned thank the Examiner for the interview and for the helpful discussion of the issues in the interview.

During the interview, the parties discussed the art rejections, particularly discussing the Andresakis et al. reference and the Bayes et al. reference. No agreement was reached. The Examiner indicated his intention to maintain the rejection unless Applicants could set forth facts or argument showing why the asserted combination either would not be made by the person of ordinary skill, or why the claimed invention would not be obtained by the contended combination of references.

The foregoing constitutes Applicants' summary of the substance of the personal interview of 22 February 2007, in accordance with 37 CFR 1.133 and MPEP 713.04.

### **Declaration of Patrick Brooks Under 37 C.F.R. 1.132**

Submitted herewith is the Declaration of Patrick Brooks Under 37 CFR 1.132. As shown in the Declaration, Mr. Brooks is a person of skill in the art of metal surface

modification. As stated in the Declaration, Mr. Brooks has reviewed the Andresakis et al., Bayes et al. and Lee et al. references. As stated by Mr. Brooks in the Declaration, he has run a series of tests of roughening of metal surfaces by a black oxide process, the process of Bayes and a process in accordance with the present invention. These tests show that neither black oxide nor the Bayes process would obtain the claimed surface area increase, and show that the composition in accordance with an embodiment of the present invention does provide such surface area increase. In addition, as discussed by Mr. Brooks, the Andresakis et al. process, even if modified by the use of Bayes et al., does not lead to the present invention, and would not have rendered it obvious, because the surface roughening taught by Bayes, if substituted for the black oxide taught by Andresakis et al. and applied to the substrate disclosed by Lee et al., would not result in the claimed invention including the specified increase in surface roughness.

Thus, Applicants respectfully submit that the facts shown by the Declaration of Mr. Brooks show that the presently claimed invention would not be obtained by the prior art or by the specific combination asserted by the Examiner, since not all the claim limitations are shown in the prior art.

#### **Rejection of Claims over Andresakis et al. Alone and In Combination**

Claims 1-5, 8-18 and 24-43 stand rejected as obvious over Andresakis et al., U.S. Patent No. 6,500,339, in view of U.S. 2003/0029730 to Lee et al. and U.S. Patent No. 6,261,466 to Bayes et al. Claims 5-7 stand rejected as obvious over Andersakis et al. in view of Lee et al. and Bayes et al., and further in view of U.S. Patent No. 6,562,149 to Greiser et al., U.S. Patent No. 6,036,758 to Fairweather, and U.S. Patent No. 4,637,899 to Kennedy, Jr. Applicants respectfully traverse the rejections of all of these claims as based in any combination on Andresakis et al., Bayes et al. and Lee et al.

Applicants respectfully submit that the cited references fail to disclose or suggest a step of micro-roughening a mixed-metal layer, wherein the surface area of the first major surface is increased by a factor of from about 60% to about 120% in the micro-roughening step, as claimed, and therefore cannot have rendered obvious any of the presently pending claims.

The cited and relied-upon prior art fails even to recognize the problem recognized and solved by the present invention - the problem of galvanic edge effects which occur when the mixed-metal layer is roughened by an oxidative process in which an edge effect

would occur due to the two different metals in the mixed-metal layer or circuitry. The only recognition of this problem is in Applicants' specification, not in Lee et al., not in Bayes et al. and not in Andresakis et al. The only solution to this newly-recognized problem is provided in Applicants' specification - the claimed invention is the solution to this problem.

For these reasons, Applicants respectfully submit that the presently claimed invention fully distinguishes over the prior art of record and respectfully requests reconsideration and withdrawal of the rejections of the claims, based on the foregoing amendments and arguments.

Applicants further request that the withdrawn claims 19 and 20 be reinstated into the application, since these were species and claim 1 is generic to these species.

**Second Declaration of Craig V. Bishop Under 37 C.F.R. 1.132**

Applicants submit herewith the Second Declaration by Craig Bishop, in which Mr. Bishop acknowledges that his statements made regarding the expected effects on copper foil resulting from treatment with the "adhesion promotion composition" of Bayes were erroneous. As stated in the Second Declaration, subsequent tests conducted by Atotech have shown that, contrary to Mr. Bishop's expectation, the Bayes composition in fact does remove substantial quantities of copper from a copper foil treated with the Bayes composition.

Regarding the previously submitted Declaration of Craig V. Bishop, Applicants hereby explicitly withdraw and disavow as mistaken both the statements in the Declaration by Mr. Bishop that the Bayes "adhesion promotion composition" would remove no more than inadvertent amounts of metal, and Applicants' arguments that were based on Mr. Bishop's statements and submitted in the previous Reply to Office Action (filed September 18, 2006). As set forth in the Second Declaration, the statements were made by Mr. Bishop based on his experience and without having tested the composition. However, Applicants subsequently (December 2006) conducted tests which have shown that the Bayes "adhesion promotion composition" would in fact remove significantly more than inadvertent amounts of metal, although the surface roughening effects are different from those of the present invention. In fact, the Bayes "adhesion promotion composition" has been found to remove substantially more metal than does the composition of the present invention. Applicants regret this error, but respectfully submit that it was made in good faith

and was not intended to mislead the Examiner, the Office or anyone else. It was simply a mistaken statement as were the arguments based thereon based on this mistake of fact.

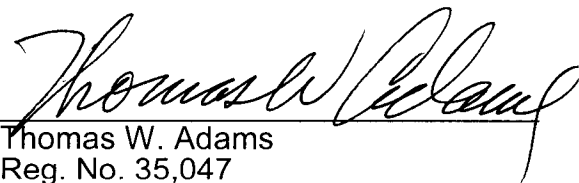
### **Conclusion**

It is respectfully submitted that all of the claims presently in the application are allowable, and that any claims withdrawn from consideration due to previous or the present election of species should be reinstated into the case and allowed.

In the event issues arise as a result of the filing of this paper, or remain in the prosecution of this application, Applicants request that the Examiner telephone the undersigned attorney to expedite allowance of the application. Should a Petition for Extension of Time be necessary for the present Reply to the outstanding Office action to be timely filed (or if such a petition has been made and an additional extension is necessary) petition therefor is hereby made and, if any additional fees are required for the filing of this paper, the Commissioner is authorized to charge those fees to Deposit Account #18-0988, Docket No. ATODP0100US.

Respectfully submitted,

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